

CLAIMS:

1. Method of reconstructing an image from measured line-integrals of an object, the method comprising the steps of: binning of the measured line-integrals into a plurality of temporal bins; determining a plurality of motion fields for the plurality of temporal bins; selecting first data from a selected bin of the plurality of temporal bins;
5 forward-projecting an intermediate image for forming second data by using a motion field of the plurality of motion fields that belongs to the selected temporal bin; determining a difference between the first data and the second data; up-dating the intermediate image on the basis of the difference.
- 10 2. Method according to claim 1, wherein the intermediate image is up-dated on the basis of a back-projection performed by using the motion field that belongs to the selected temporal bin.
- 15 3. Method according to claim 1, wherein the plurality of motion fields contains information with respect to a location shift and a local deformation of basis functions of the intermediate image with regard to the measured line-integrals.
4. Method according to claim 1, wherein the steps of claim 1 are iteratively performed until an end criterion has been fulfilled.
20
5. Method according to claim 1, wherein the plurality of motion fields describes at least one of a motion and deformation of the object with respect to a reference grid of the intermediate image.
- 25 6. Method according to claim 1, wherein the plurality of motion fields is

determined from a set of images where each image is reconstructed using data from one temporal bin of the plurality of temporal bins only;

7. Image processing device for reconstructing an image from measured line-integrals, comprising: a storage for storing the positron emission data; and an image processor for reconstructing the image from the measured line-integrals; wherein the image processor is adapted to perform the following operation: binning of the measured line-integrals into a plurality of temporal bins; determining a plurality of motion fields for the plurality of temporal bins; selecting first data from a selected bin of the plurality of temporal bins; forward-projecting an intermediate image for forming second data by using a motion field of the plurality of motion fields that belongs to the selected temporal bin; determining a difference between the first data and the second data; and up-dating the intermediate image on the basis of the difference.
- 15 8. Positron emission tomography system, wherein the positron emission tomography system includes a storage for storing measured line-integrals and an image processor, wherein the image processor is arranged to perform the following operation: binning of the measured line-integrals into a plurality of temporal bins; determining a plurality of motion fields for the plurality of temporal bins; selecting first data from a selected bin of the plurality of temporal bins; forward-projecting an intermediate image for forming second data by using a motion field of the plurality of motion fields that belongs to the selected temporal bin; determining a difference between the first data and the second data; up-dating the intermediate image on the basis of the difference.
- 25 9. Computer program product comprising computer program means to cause a processor to execute the following steps when the computer program means are executed on the processor: binning of the measured line-integrals into a plurality of temporal bins; determining a plurality of motion fields for the plurality of temporal bins; selecting first data from a selected bin of the plurality of temporal bins; forward-projecting an intermediate image for forming second data by using a motion field of the
- 30

plurality of motion fields that belongs to the selected temporal bin; determining a difference between the first data and the second data; up-dating the intermediate image on the basis of the difference.